EXTENDED **ABSTRACT**

Complete Title of Paper

GENERIC MODELING OF A LIFE SUPPORT SYSTEM FOR PROCESS TECHNOLOGY COMPARISONS

Speaker and Authors

J.F. Ferrall, P.K. Seshan, N.K. Rohatgi and G.B. Ganapathi

Abstract

A generic model of a life support system has been developed by the National Aeronautics and Space Administration to quantitatively compare and select systems and technology options for long-duration manned missions. The model consists of a modular, top-down hierarchical breakdown of the life support system into subsystems, and subsystems into subsystem functional elements representing individual processes. The simulation model is called the Life Support Systems Analysis Simulation Tool (LiSSA-ST).

This paper describes the Generic Modular Flow Schematic (GMFS) modeling technique. The GMFS can be used to synthesize, model, analyze, and quantitatively compare many configurations, from simple, open-loop to complex closed-loop life support systems. The GMFS is coded in ASPEN-PLUS to compute the material and energy balances on a steady-state person-day basis. Selected output is stored in an ASCII file that is imported to a spreadsheet program where important parameters including weight, power, and volume of the life support system are computed. The spreadsheet program is called the Life Support Systems Analysis Trade Tool (LiSSA-TT).

Results of using the LiSSA-ST and the LiSSA-TT will be presented for comparing life support system and process technology options for a Lunar Base and a Mars Exploration Mission.

Do you require audio-visual equipment for your presentation? If so, check all that apply:

( ) 35 mm slide projector/screen
(√) **Overhead** projector/screen
( ) VCR/monitor
( ) **Other (explain)** .

SESSION CHAIR CHECKLIST:

Date Received: _____

Acceptance Decision: Yes ( ) No ( )

Comments: _____